

REMARKS

Claims 1, 28, 30-62 and 63-66 are pending. Claims 42, 43, 58, 59 and 60 are cancelled herein, claims 2-27, 29 and 62 having been previously cancelled. Claims 1, 30, 32, 34-51, 53, 55-57, 61 and 63-66 are amended. Claims 67-69 are added. Support for the amendments may be found in the Specification at paragraphs [0050] or [0054], for example. No new matter is submitted. Accordingly, entry of the claim amendments set forth herein is respectfully requested.

Applicants appreciate the courtesies extended by Examiner Brian Gordon during the telephonic interview conducted January 10, 2006 regarding this matter. Applicants' record of the interview is provided by the comments made herein.

This response is submitted, together with a Request for Continued Examination and appropriate Petition for Extension of Time to Respond, in response to the Final Office Action mailed August 15, 2005. This response thus requests reconsideration of the rejection of claims 1, 28, 30-61 and 63-66 as set forth herein.

With respect to item 1 of the Office Action, Applicants have previously amended the Specification to address minor informalities found therein.

With respect to item 2 of the Office Action and the claim interpretation issues presented therein, Applicants assert that none of the pending claims include a recitation of "adapted to" or "capable of" language. Applicants maintain that the actuators (614a, 614b, 614c) in U.S. Patent No. 5,957,167 to Feygin move the respective liquid holding means (300a, 300b, 300c) in the same direction as the dispensing direction of the liquid (Fig. 6 and col. 4, lines 32-44). Further, the U.S. Patent No. 6,309,891 to Shalon, et al (hereafter "Shalon") discloses dispensing fluid by movement of a fluid dispensing

member in the same direction as the fluid being dispensed (col. 2, lines 22-25 & 32-39, and col. 6, lines 65-col. 7, line 5). Furthermore, U.S. Patent No. 6,551,557 to Rose, et al (hereafter “Rose”), discloses capturing dispensed liquid by moving a conduit member in a direction opposite the direction of discharge (col. 7, line 28 & col. 9, line 29) but does not disclose dispensing said liquid by movement of the conduit member in such opposite direction. The Office Action concedes, in item 2, that dispensing in the cited references (presumably Shalon) occurs when deceleration or abrupt stopping occurs. Such understanding supports Applicants’ contention that movement of the dispensing member in Shalon occurs in the same direction as the dispensing direction of the liquid. That any dispensing in Shalon is proposed in the Office Action as occurring at other than the instantaneous stopping point of the dispensing member does not negate that the dispensing member proceeds in the same direction as the dispensing direction of the liquid up until such stopping point is encountered, which is contrary to that claimed by the Applicants. None of the applied references dispense liquid by movement of at least one conduit member in a direction opposite the dispensing direction of the liquid by movement of the at least one conduit member according to a decrease in a control signal or voltage applied to an actuator associated with the at least one conduit member as recited in Applicants’ independent claims 1, 61 and 69.

With respect to item 3 of the Office Action, claims 42, 43, and 58-60 have been cancelled, thereby rendering moot any further comments with respect thereto as set forth in the Office Action, including the forewarning of an imminent double patenting rejection with respect thereto. Moreover, claims 1, 30, 32, 34-41, 44-51, 53, 55-57 and 61 have been amended to recite “at least one conduit member” to obviate any objection or alleged

indefiniteness with respect to the plurality of conduit members otherwise recited in claim 57. Claims 61 and 63-67 have also been amended to recite “at least one conduit member”.

With respect to the 35 U.S.C. 112, 2nd paragraph rejections of claims 28, 30-40, 42, 43, 48, 50, 53, 55, 57 and 63 set forth in items 4-8 of the Office Action, Applicants assert that the cancellation of claims 42 and 43 renders moot any rejection thereof. Claims 1, 30, 32, 34-41, 44-51, 53 and 55-57 have been amended as suggested in the Office Action to recite “at least one conduit member”, thereby obviating the alleged indefiniteness with respect to claim 57. Claims 48, 50, 53 and 55 have been re-written to recite structural limitations as required by the Office Action, thereby obviating any alleged indefiniteness thereof. With respect to claims 28 and 30-40, Applicants assert that the recitations set forth therein further relate to structural attributes of the at least one conduit member relative to the trestle and liquid set forth in the underlying base claim 1. Thus, any alleged indefiniteness of claims 28 and 30-40 is misplaced. Further, claim 63 is a method claim and the recitation set forth therein is appropriate therefore. Accordingly, withdrawal of the 35 U.S.C. 112, 2nd paragraph rejections of claims 28, 30-40, 42, 43, 48, 50, 53, 55, 57 and 63 is respectfully requested. For the same reasons, any objection or rejection of the claims based on alleged inappropriate intended use recitations in structure claims are obviated, and withdrawal thereof respectfully requested.

In items 9 and 10 of the Office Action, claims 1, 28-40, 42-53, 55, 57-61 and 63-66 are rejected under 35 U.S.C. §102(e) as allegedly anticipated by U.S. Patent No. 5,957,167 to Feygin (hereafter “Feygin”). The rejection is respectfully traversed.

To maintain a 35 U.S.C. §102 rejection, a reference must teach each and every element of a claimed invention. Lindeman Maschinenfabrik GMBH v. American Hoist and Derrick Company, 730 F.2d 1452, 1458; 221 U.S.P.Q. 481, 485 (Fed. Cir., 1984). As asserted previously, Feygin does not do so.

Applicants' independent claim 1 recites a liquid pipetting apparatus comprising, *inter alia*, at least one conduit member holding liquid therein, an actuator associated with the at least one conduit member, and a voltage applying mechanism configured to move the at least one conduit and dispense liquid therefrom according to voltage applied to the actuator. In particular, the at least one conduit is moved in a dispensing direction when voltage is applied to the actuator, is temporarily stopped, and is moved in a direction opposite the dispensing direction when the applied voltage is decreased. The liquid held in the at least one conduit member is dispensed from the dispensing end thereof, when the at least one conduit member is temporarily stopped and then moved by the actuator in the direction opposite the dispensing direction of the liquid in accord with the decrease in voltage applied to the actuator. As recited in claim 1, the liquid is thus dispensed when the at least one conduit member moves in the direction opposite to the dispensing direction of the liquid by moving the at least one conduit member via the actuator. New claim 69 further recites a means for generating a control signal that drives the actuator to a temporary stop and then to a direction opposite the dispensing direction of the liquid from the at least one conduit member in accord with a decrease in the control signal applied to the actuator. Claim 61 generally recites a method of dispensing liquid from at least one conduit member by movement of the at least one conduit member in a direction

opposite the direction of the dispensing liquid in accord with the decrease in voltage applied to the actuator.

Feygin discloses a method and device wherein an actuator stops and rapidly decelerates a liquid dispensing member (col. 4, lines 9-12 & Fig. 5), and liquid held in the liquid dispensing member that is rapidly decelerated is dispensed therefrom (col. 4, lines 25-44). In particular, the movable stop member 624 is moved to the rigid base 618, and is rapidly stopped by bumping the member 624 to the fixed stop member 626, thereby discharging the liquid from the fluid dispensing members 300. Spring 614 thus urges the fluid dispensing members 300 in the same direction as the dispensing direction of the liquid in order to discharge the liquid therefrom. After discharging the liquid, a spring 614 is shortened and the fluid dispensing members 300 are moved to an upper side. The liquid in Feygin is not dispensed at this time however. Thus, Feygin teaches a method and device whereby fluid is dispensed in an exactly contrary manner to that recited in each of the independent claims 1, 61 and 69 of Applicants' invention, which dispenses liquid by the movement of components in a direction *opposite* from the direction of the dispensing liquid. The abrupt stop of Feygin, referred to in the Office Action, is not movement of the at least one conduit member in a direction opposite the dispensing direction of the liquid as recited in Applicants independent claims. Rather, the abrupt stop of Feygin is just that, a stop, i.e., non-movement. Moreover, Feygin fails to disclose dispensing liquid from at least one conduit moved in a direction opposite the dispensing direction according to a decrease in voltage applied or a control signal applied to an actuator associated with the at least one conduit as recited in Applicants' independent claims 1, 61 or 69. All pending claims depend directly or indirectly from one of

Applicants' independent claims 1, 61 and 69. Further, the cancellation of claims 42, 43, and 58-60 renders moot any rejection thereof. Thus, as Feygin fails to teach or disclose each and every element of the claimed invention, withdrawal of the 35 U.S.C. §102(e) rejection of claims 1, 28-40, 42-53, 55 and 57-66 based on Feygin is respectfully requested.

In item 11 of the Office Action, claims 1, 57-61 and 63-66 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Patent No. 6,309,891 to Shalon, et al. (hereafter "Shalon"). The rejection is respectfully traversed.

Applicants' independent claims 1, 61 and 69 are discussed above, claims 42, 43, 58-60 having been cancelled. Shalon discloses a variety of printhead configurations, including capillary printing systems, for depositing ink or other agents onto a substrate. Where the printing methods of Shalon decelerate a capillary to move minute liquid held therein through a bore, out of a tip, and onto the substrate, however, the printing is achieved by contact printing, e.g., by tapping the tip onto the substrate (col. 2, lines 22-25 & 32-39, and col. 6, line 65 – col. 7, line 5). Shalon thus teaches printing by moving a fluid dispensing member in the same direction as the direction in which liquid is dispensed as by decelerating the capillary vertically towards the substrate. Applicants maintain therefore that nothing in Shalon suggests dispensing liquid by movement of components in a direction *opposite* the dispensing direction, as recited in each of Applicants' independent claims 1, 61 and 69, from which all remaining claims directly or indirectly depend. Moreover, Shalon fails to teach or suggest dispensing liquid from at least one conduit moved in a direction opposite the dispensing direction according to a decrease in voltage applied or a control signal applied to an actuator associated with the

at least one conduit as recited in Applicants' independent claims 1, 61 or 69. Further, the cancellation of claims 42, 43, 58-60 renders any rejection thereof moot. Accordingly, withdrawal of the 35 U.S.C. §102(b) rejection of claims 1, 57-61 and 63-66 based on Shalon is respectfully requested.

In item 12 of the Office Action, claims 1, 28, 30-50 and 54-61 and 63-66 are rejected under 35 U.S.C. §102(e) as allegedly anticipated by U.S. Patent No. 6,551,557 to Rose, et al. (hereafter "Rose"). The rejection is respectfully traversed.

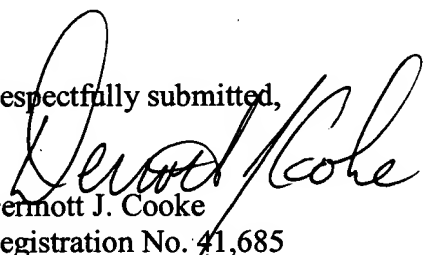
Applicants' independent claims 1, 61 and 69 are discussed above, wherein dispensing liquid from at least one conduit member by movement thereof in a direction opposite the dispensing direction of the liquid is detailed. Claims 42, 43 and 58-60 have been cancelled. Rose generally discloses a microfluidic transfer device whereby liquid is dispensed from a nozzle 214 of tips 200 to a target 30. The dispensing may be contact (touch off) dispensing (Fig. 3) whereby the liquid is dispensed by lowering the nozzle 214 (or nozzle end 205) and tips 200 towards the target 30 (col. 6, lines 1-2) so that the liquid is deposited on the target 30 as contact with the target 30 occurs (col. 6, lines 11-13). In this regard Rose teaches contrary to that claimed in Applicants independent claims 1, 59 and 61 whereby liquid is dispensed by moving at least one conduit member in a direction opposite the dispensing direction of the liquid in order to dispense the liquid. On the other hand, where Rose discloses an aspirate-dispense operation, Rose requires a dispensing pump 22 in combination with a drop-on-demand solenoid valve 20 (col. 11, lines 55-63). The combination of the dispensing pump 22 and the drop-on-demand solenoid valve 20 is to control the volume of liquid cycled through the tips 200 at predetermined frequencies. Applicants independent claims 1, 61 and 69 do not recite, nor

require, such a combination as disclosed in Rose in this regard. Thus, Rose fails to teach or disclose each and every feature recited in Applicants' independent claims 1, 61 and 69, from one of which all other claims depend. Further, the cancellation of claims 42, 43 and 58-60 renders moot any rejection thereof. Accordingly, withdrawal of the 35 U.S.C. §102(e) rejection of claims 1, 28, 30-50, 54-61 and 63-66 based on Rose is respectfully requested.

Applicants submit that the claims presented are patentably distinguishable and pose no 35 U.S.C. §112 issues. Accordingly, prompt allowance of claims 1, 28, 30-41, 44-57, 61 and 63-69 is respectfully solicited.

If the Examiner determines that anything further is desirable to place this application in even better form for allowance, the Examiner is invited to telephone the undersigned.

Respectfully submitted,


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